Electricity 1-3 REVIEW Quiz date _____

Name _____ KEY

1) What are the 3 laws of charges. Draw photos to represent them.

1) opposites attract (+) (−)
2) like repel (−) (−)
3) Charged attract neutral (+) (0)

2) Explain how a positively charged object becomes neutral. Compare that to how a negatively charged object becomes neutral. (remember, protons cannot move. They are stuck in the nucleus).

Positive → Must gain electrons.

Negative → loses e^-

*only e^- can move. Protons (+) stuck in nucleus

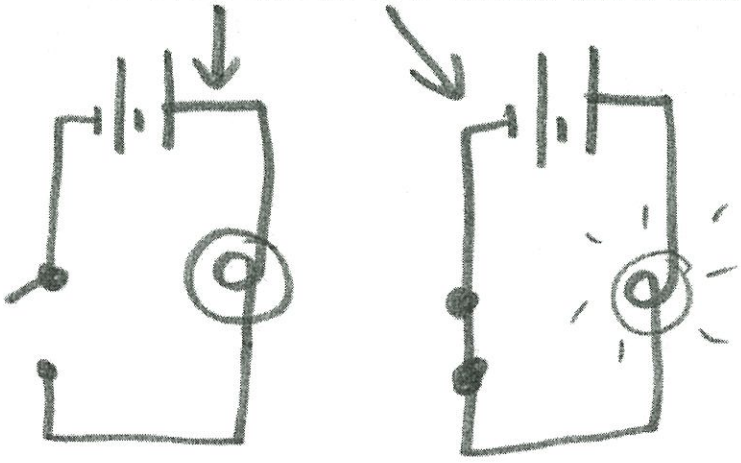
3. What is the difference between a conductor, insulator, and semi conductor? Give examples of each.

Conductor - low resistance. Allows e^- to flow. ex) metal

Insulator - high resistance. No e^- flow. ex) rubber

Semi-conductor - medium resistance. Slows flow of e^-. lamps, motors.

4. Draw an OPEN and CLOSED circuit. Show the difference.



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5. What is the definition of current and voltage (aka potential difference).

Current- amount of electrons flowing

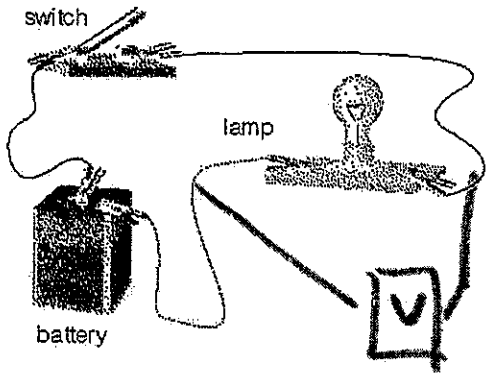
Voltage- force of the electrons (aka potential difference)

6. What do I use to measure current? Ampmeter. Where would it go in the circuit below?

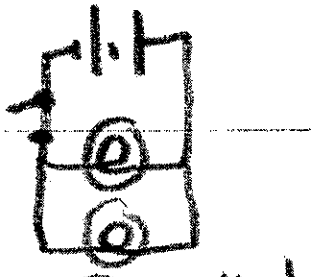
Anywhere

7. What do I use to measure voltage? Voltmeter. Where would it go in the circuit below?

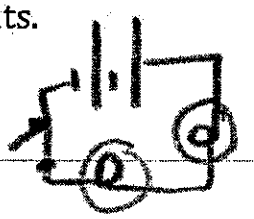
On either side of the load.



8. Draw a series and then a parallel circuit containing a battery with 3V, two bulbs, a switch to control both lights.



Parallel



Series

* Remember every cell is 1.5V ↗ ↑ negs

9. What does a resistor do? It is measured in: Ohm's

↳ slows the flow of electrons

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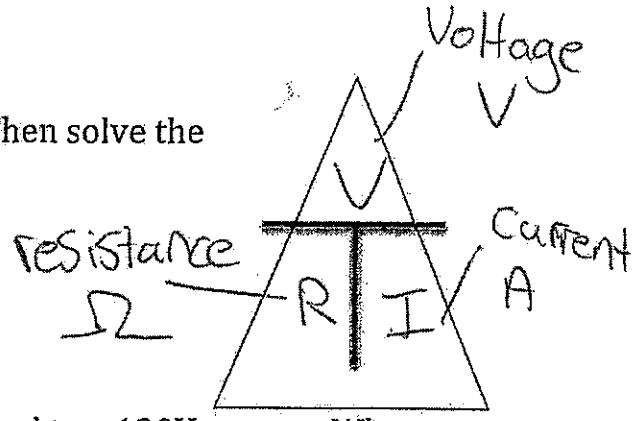
10. Fill in the triangle with the Ohm's equation. Then solve the following problems.



11. A toaster with a resistance of 145 Ω is connected to a 120V source. What current will flow through the toaster?

R = 145Ω
V = 120V
I = ___ A

$I = \frac{V}{R}$

$I = \frac{120V}{145\Omega}$

I = 0.827A

12. What is the potential difference across a 1500 Ω resistor carrying a current of 0.075A (75mA)? voltage

R = 1500Ω
V = ___ V
I = 0.075A

V = R x I

1500 x 0.075

V = 112.5v

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13. What is the resistance of an electric heater, if a current of 6A runs through it when it is connected to a 110V wall outlet?

R = ?
I = 6
V = 110

$\frac{110}{6} = 18.3\overline{3}\ \Omega$

14. What is the resistance of a light bulb if a 35V battery sends a current of 2.4 A through it?

V = 35V
I = 2.4A

14.58 Ω

15. A stove with a resistance of 168 Ω is connected to a 120V source. What current will flow through the toaster?

$\frac{120}{168} = 0.71\text{A}$

16. What is the potential difference across a 1390 Ω resistor carrying a current of 0.039A (75mA)? Volt

$1390 \times 0.039 = 54.21$

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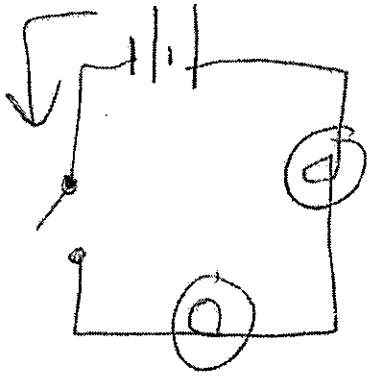
Draw the following circuit drawings:

13) Two lamps and a switch are hooked up in a **series** with a 3V battery. Show the flow of electricity.



electrons leave the negative end

14) Four lamps in parallel with one switch that controls two of the lights but will not affect the other two. Include a 6V battery to power your circuit